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Hodak

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(54) **SEALING CLOSURE FOR SWIMMING POOL SKIMMER**

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E04H 4/00 (2006.01)
E04H 4/12 (2006.01)

(52) **U.S. Cl.**
CPC ***E04H 4/1272*** (2013.01)

(58) **Field of Classification Search**
CPC E04H 4/1272; E04H 4/14
USPC 4/507, 496
See application file for complete search history.

(56) **References Cited**

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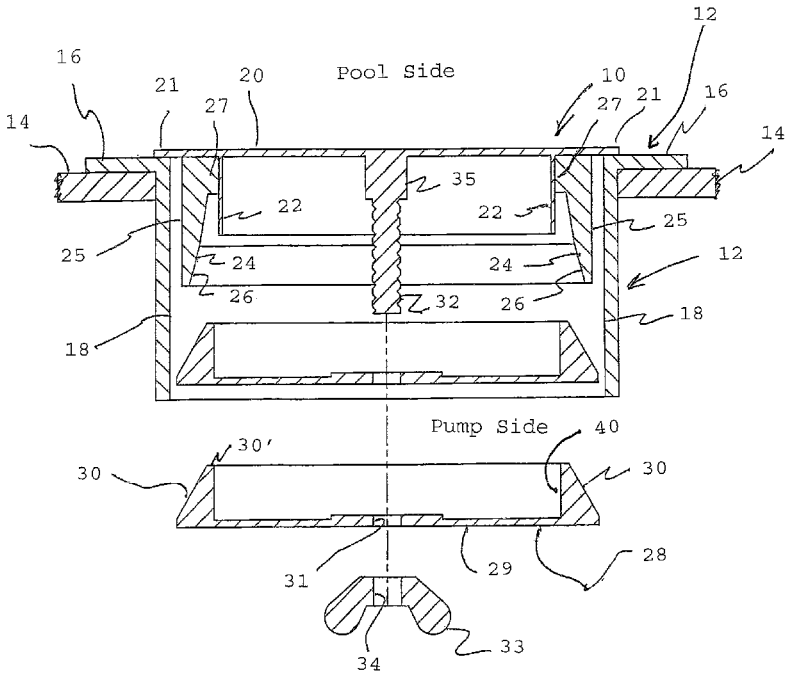
(57) **ABSTRACT**

A closure assembly for a swimming pool skimmer comprising a sealing closure which is designed dimensionally to fit common rectangularly shaped skimmer openings of rectangular shape of the skimmer opening. The faceplate has a flange which overlaps the peripheral area of the skimmer flange. The closure faceplate sidewalls extend into the skimmer opening. A monolithic sealing gasket, preferably of injection molded silicone rubber or other polymeric material, closely fits around the outer perimeter of the closure faceplate sidewalls. A wedge plate member is fitted into the sealing gasket. A closure means in the form of a nut and bolt or a stud hook member and cam lock arrangement are used to exert the closing force on the wedge plate to force the sidewalls of the wedge plate member into engagement with the monolithic sealing gasket. The wedging action of the wedge plate member against the monolithic sealing gasket causes the outer sidewalls of the sealing gasket to flex outwardly and tightly engage the sidewalls of the skimmer opening to prevent water leakage into the skimmer body. In this manner, leakage of water from the poolside into the skimmer and pump conduit is prevented.

2 Claims, 8 Drawing Sheets



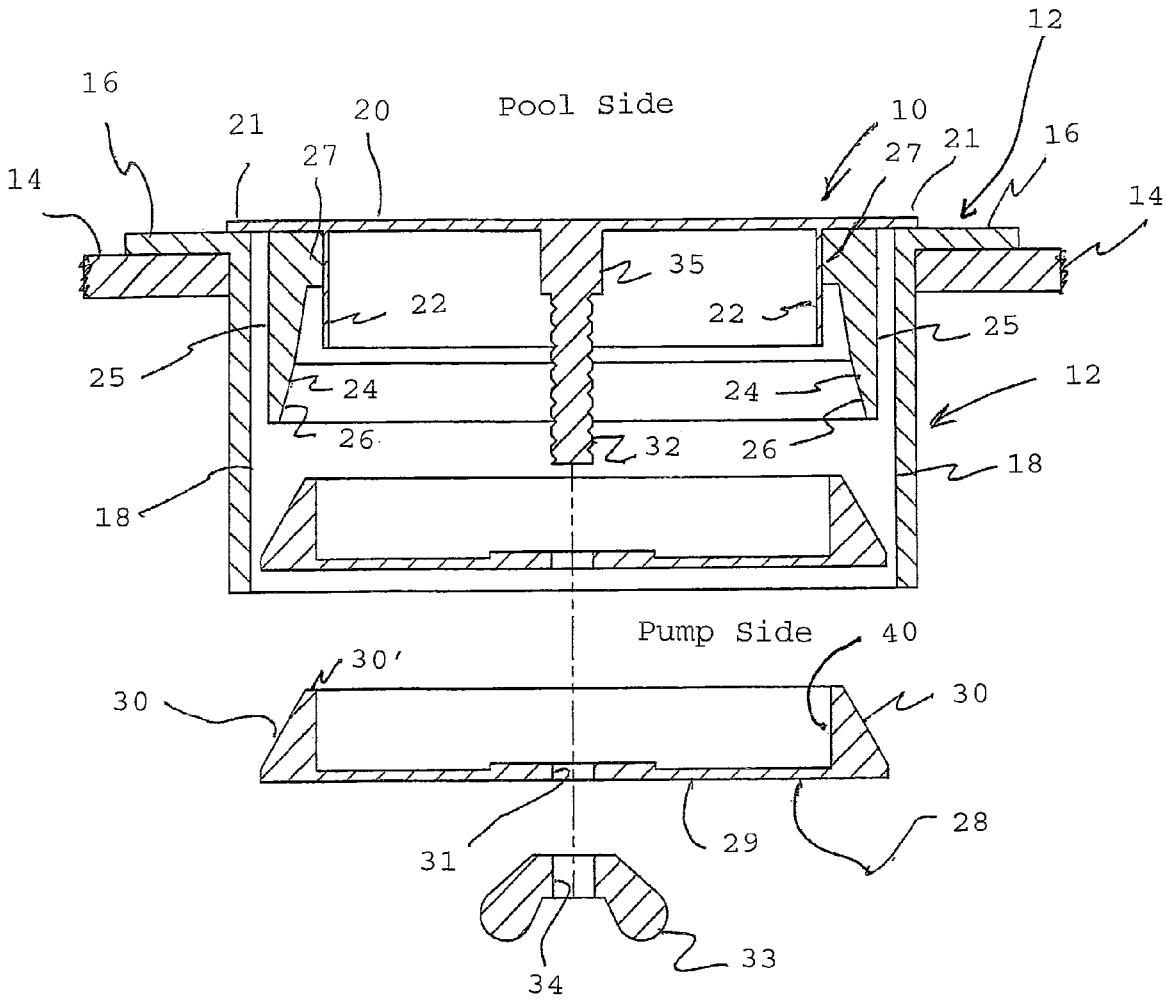

12
16
21
20
Pool Side
10
27
21
16
14
14
27
35
22
22
25
25
12
24
24
26
32
26
18
18
Pump Side
40
30'
30
30
31
29
28
33
34

Fig. 1

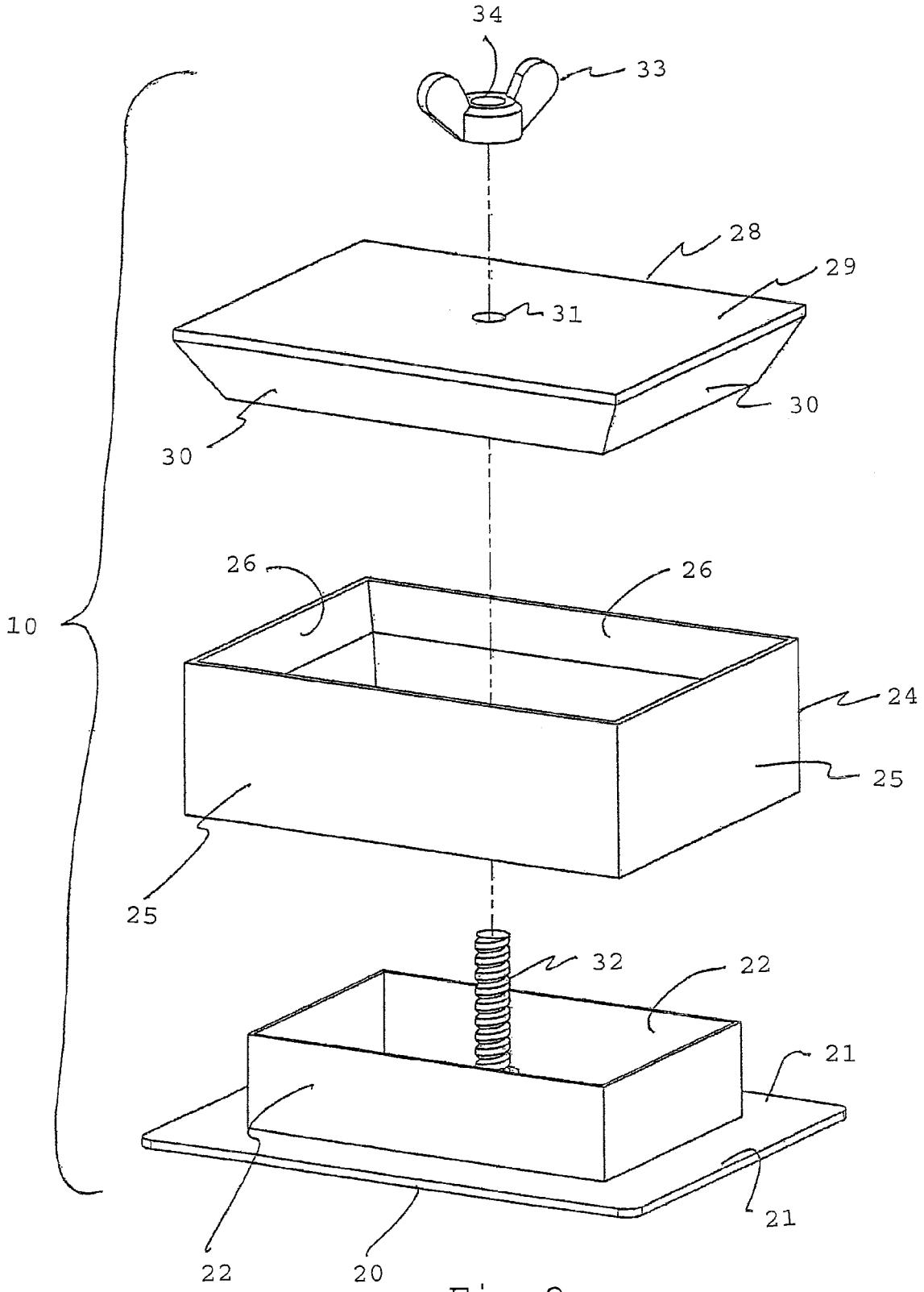


Fig.2

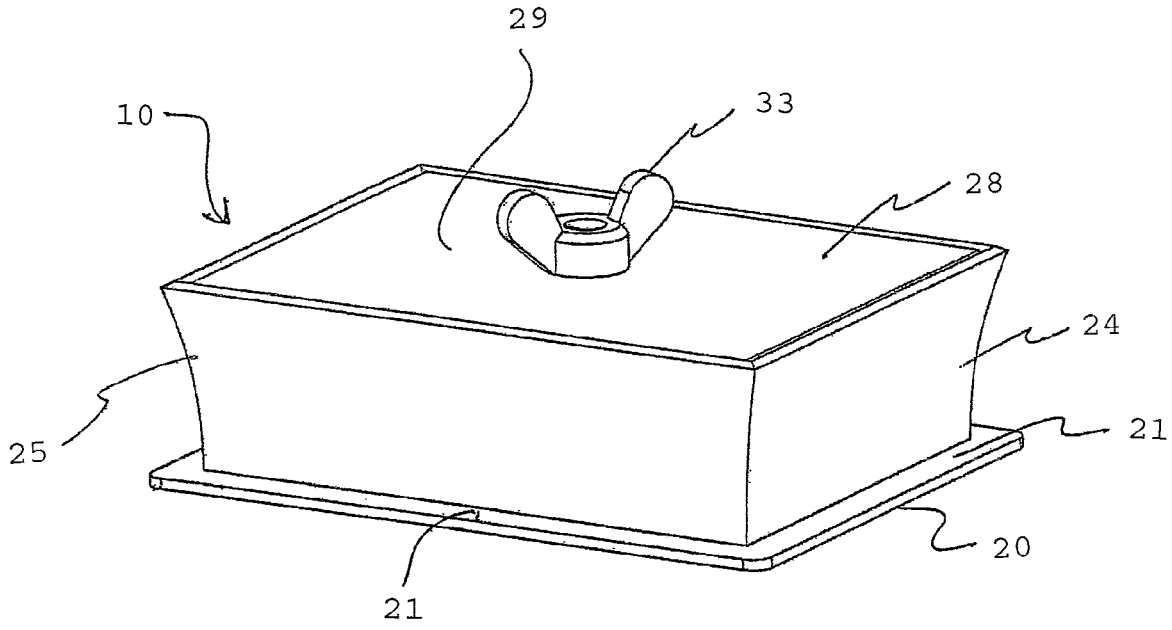


Fig. 3

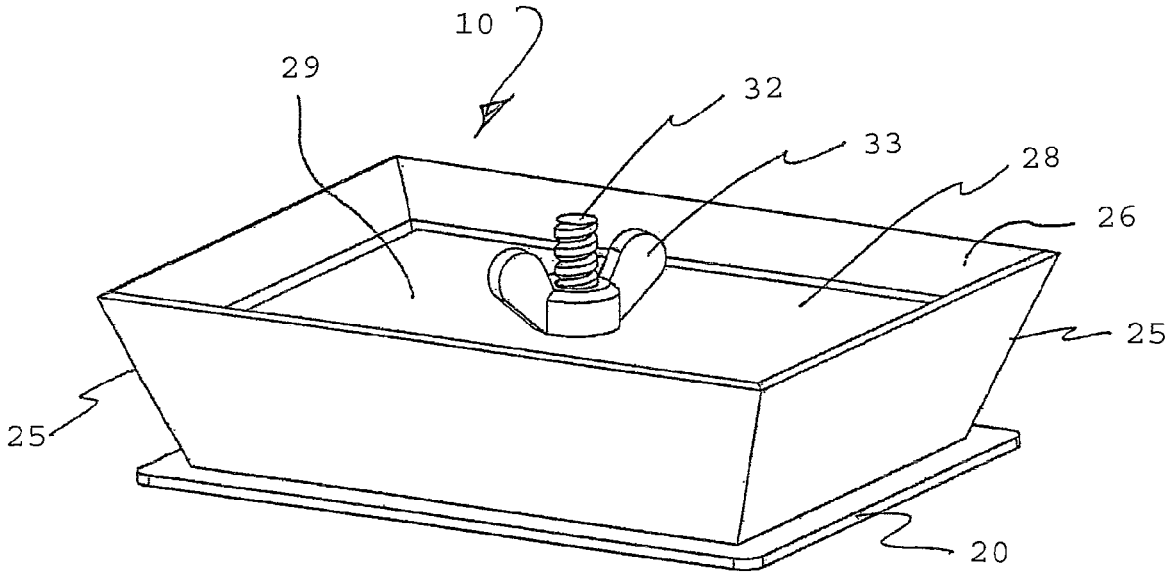


Fig. 4

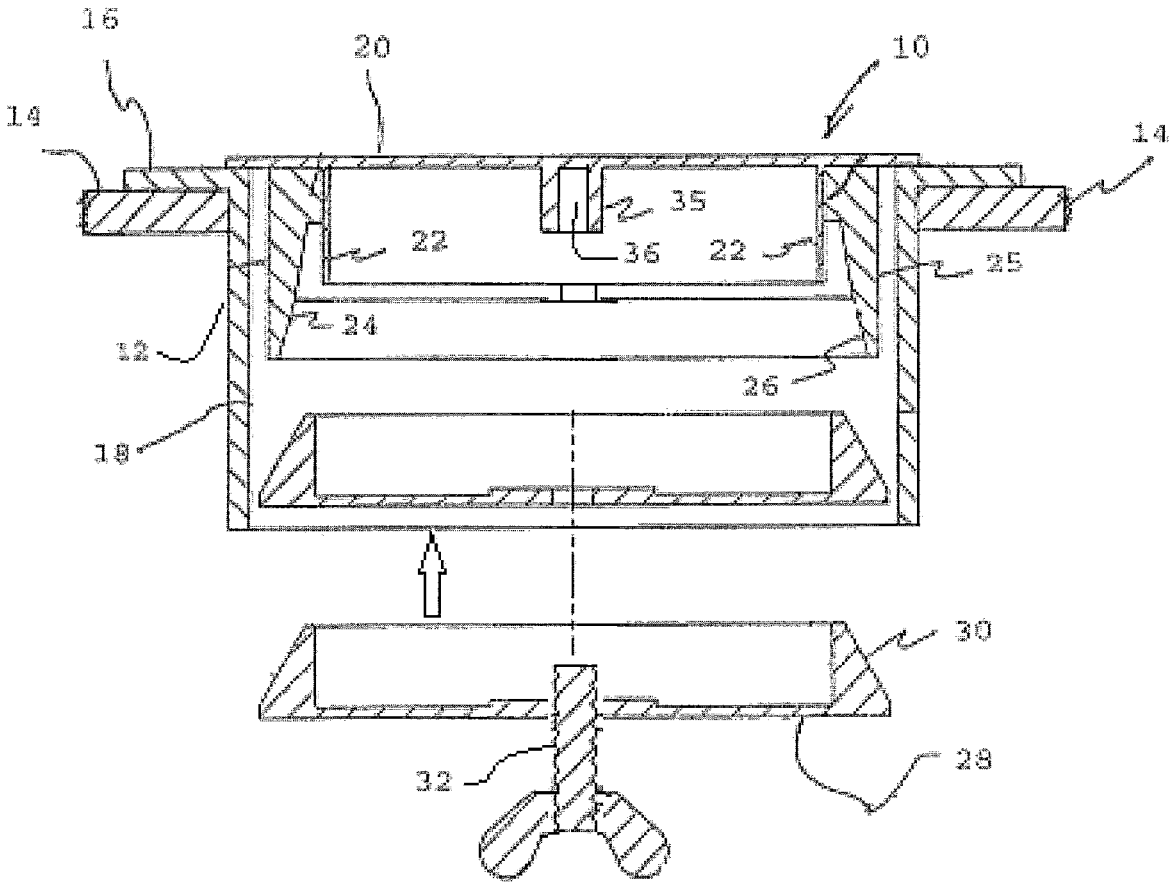


Fig. 5

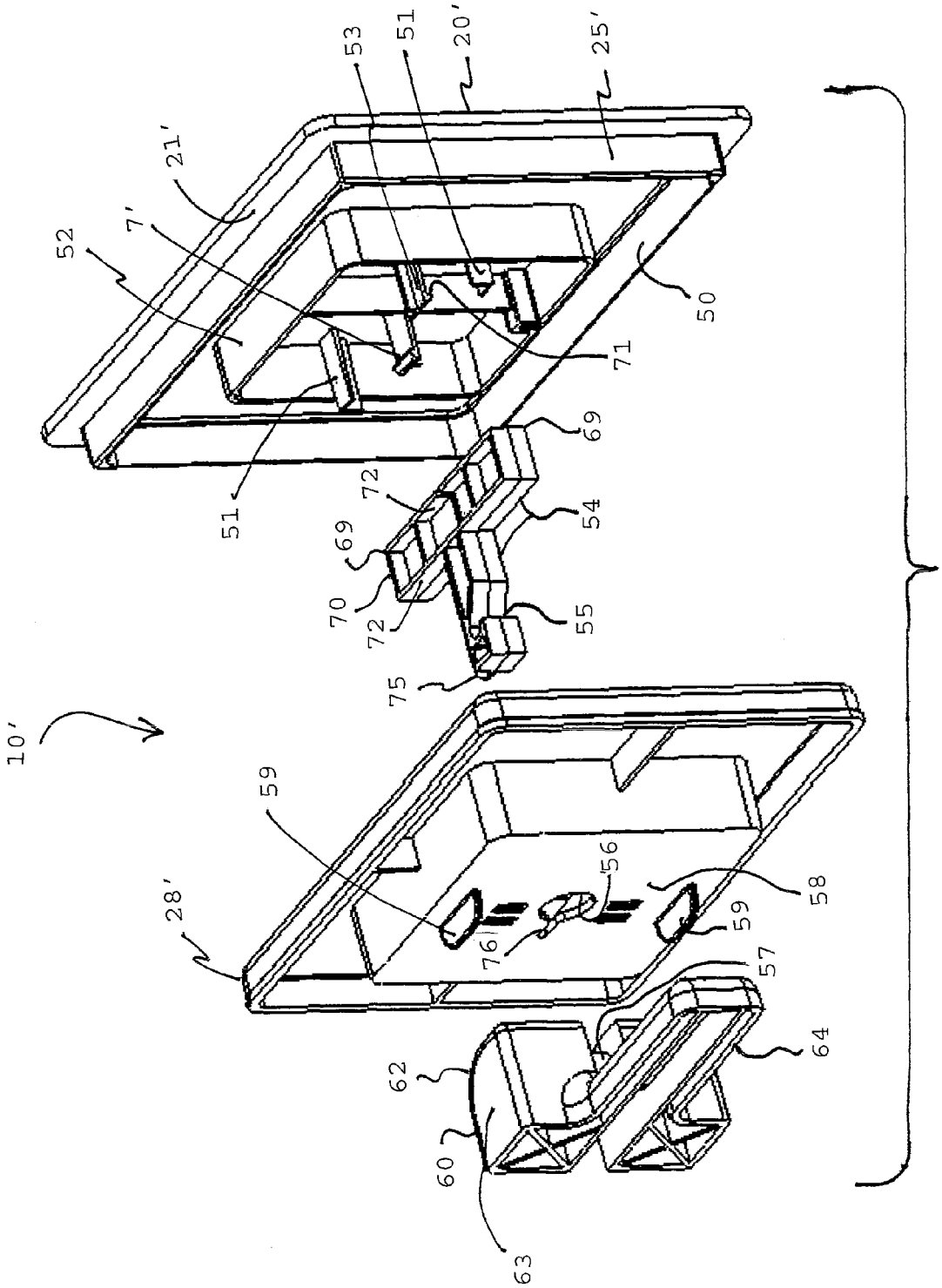

10'
20'
21'
25'
28'
50
51
52
53
54
55
56
57
58
59
60
62
63
64
69
70
71
72
75
76
7'

Fig. 6

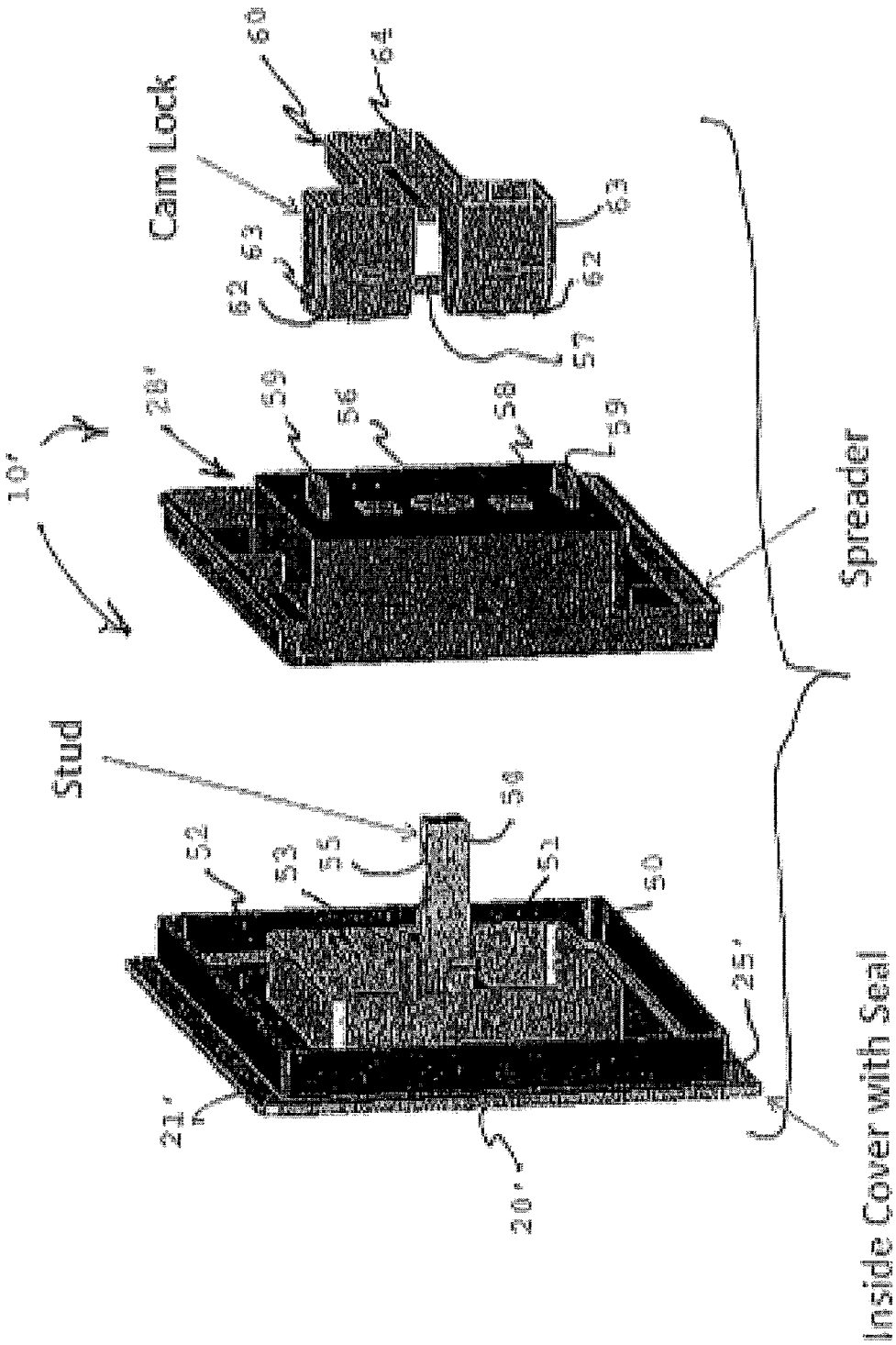

Cam Lock
60
64'
63
62
63
62
61
10'
28'
59
56
58
59
Spreader
Stud
58
52
53
55
52
50
25'
21'
20'
Inside Cover with Seal

Fig. 7

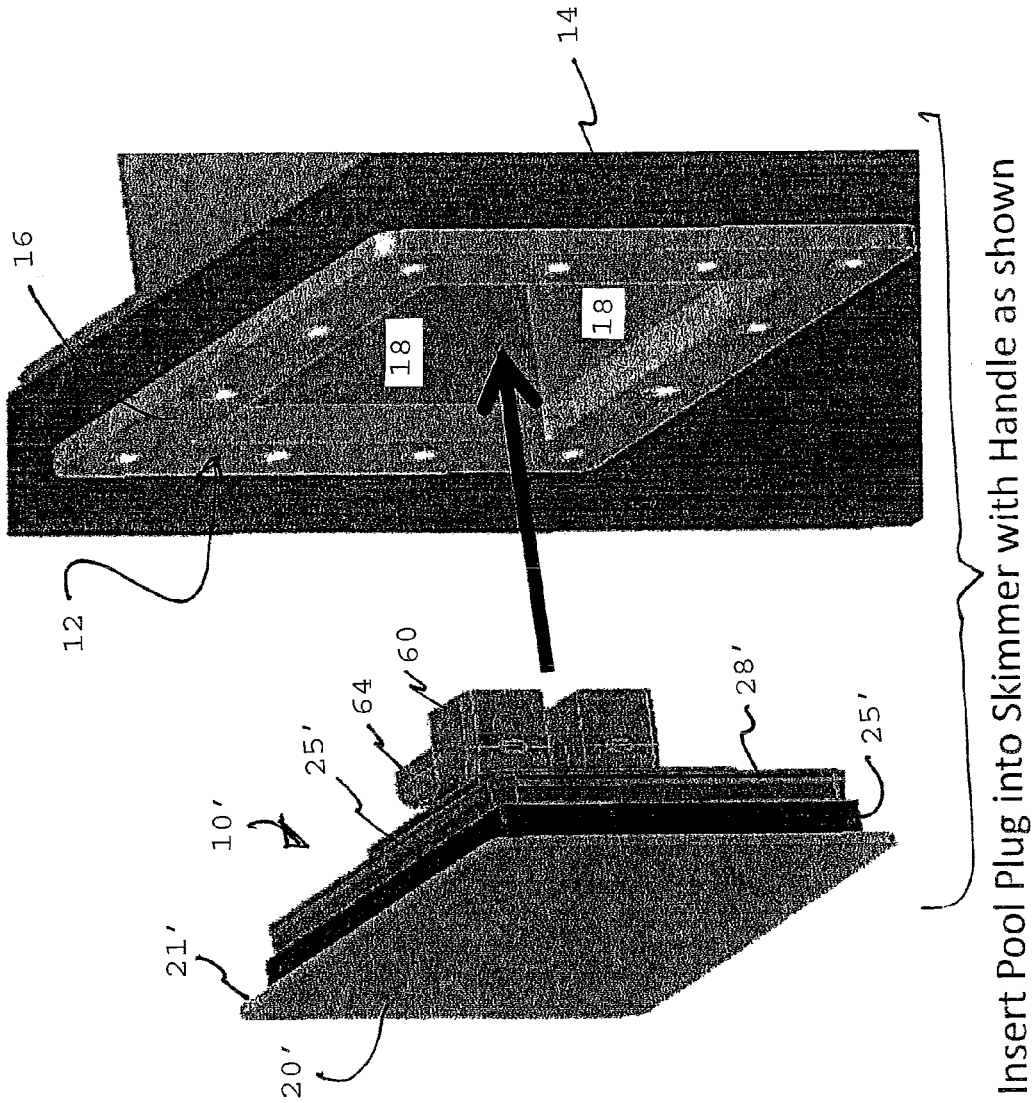

14
16
18
18
12
60
64
25'
10'
21'
20'
28'
25'
Insert Pool Plug into Skimmer with Handle as shown

Fig. 8

SEALING CLOSURE FOR SWIMMING POOL SKIMMER

CROSS-REFERENCE TO RELATED APPLICATION

This application claims priority on U.S. Provisional Application No. 61/668,096 filed Jul. 5, 2012, which is incorporated by reference in its entirety.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to swimming pools and, more particularly, to sealing apparatus for closing off the sidewall opening of a skimmer to prevent water from entering the skimmer when the pool is closed for the season.

2. Brief Description of the Prior Art

It is common to employ one or more skimming devices in the sidewalls of swimming pools, hot tubs and the like to permit surface water to be drawn off by a pump, to be filtered at a remote location and then optionally heated, and returned to the pool through one or more return ports. When the pool is closed during the winter season, for example, it is sometimes desirable to maintain a lower level of water in the pool for structural purposes. Even if completely drained, the water level in the pool will naturally rise during the closed season due to rainwater and melting snow, such that the water level oftentimes rises to a level of the skimmer opening or above. In such cases, it is necessary to close off the skimmer to prevent backflow of water through the skimmer conduit to the filtration, pump equipment, and heater so as to prevent damage to the pipes, filtration equipment, and heater due to freezing during the cold winter months.

One common way of closing off the skimmer is to employ an elongated plug-like element, marketed under the trademark "GIZMO®". The plug element is threadably secured within the floor of the skimmer body to seal the conduit communicating with the pump and filtration equipment. Several other devices for sealing off a skimmer opening with a detachable cover plate or panel are disclosed in U.S. Pat. Nos. 4,913,810; 5,937,453; and 5,285,538. These prior devices either require a retrofit of the skimmer faceplate in order to make sealing contact with a closure member as in the '810 patent, or require the use of a polymeric flexible sealing member which snaps over the skimmer opening. Such faceplate seals may lose their effectiveness due to weathering of the polymeric material, and also may require special retrofitting of the skimmer opening member to provide better sealing between the skimmer and the flexible snap-on faceplate.

SUMMARY OF THE INVENTION

The present device of my invention is directed to a closure assembly for a swimming pool skimmer comprising a sealing closure which is designed dimensionally to fit common rectangularly shaped skimmer openings of various sizes. The sealing closure comprises a closure faceplate having integral sidewalls in the rectangular shape of the skimmer opening. The faceplate has a flange which overlaps the peripheral area of the skimmer flange. The closure faceplate sidewalls extend into the skimmer opening. A monolithic sealing gasket, preferably of injection molded silicone rubber or other polymeric material, closely fits around the outer perimeter of the closure faceplate sidewalls. The monolithic sealing gasket preferably carries inside tapered sidewalls. A wedge plate member having tapered sidewalls at its perimeter, for engaging the tapered

inside sidewalls of the sealing gasket, is fitted into the sealing gasket. A bolt member is provided in one embodiment integral with the interior of the enclosure faceplate and extends through a bolt hole formed in an outer surface of the wedge plate. In one embodiment, a wing nut is fitted over the exposed threaded bolt on the outer surface of the wedge plate member, whereby rotation of the wing nut forces the tapered sidewalls of the wedge plate member into engagement with the monolithic sealing gasket. In another embodiment, a hook-shaped stud extends from an inner face of the closure faceplate and through an opening in the wedge plate. A cam lock is attached to the hook of the stud and moved to a closed position so as to exert a sealing force between the wedge plate and the sealing gasket. The wedging action of the wedge plate member against the monolithic sealing gasket, as the bolt and nut are tightened, or as the cam lock is moved, causes the outer sidewalls of the sealing gasket to flex outwardly and tightly engage the sidewalls of the skimmer opening. Thus, the tightening of the wing nut and the bolt against the bolt member or cam lock forcibly urges the sealing gasket into tight sealing engagement with the sidewalls of the interior of the skimmer opening sidewall to prevent water leakage into the skimmer body. In this manner, leakage of water from the poolside into the skimmer and pump conduit is prevented.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a cross-sectional exploded view of the sealing closure of the invention mounted on a typical skimmer plate opening;

FIG. **2** is an exploded view in perspective of the various elements of the sealing closure of the invention;

FIG. **3** is a perspective view of the sealing closure of the invention where the bolt member is in a loose, untightened position;

FIG. **4** is a view in perspective similar to FIG. **3** showing the bolt member in a tightened position;

FIG. **5** is a cross-sectional view of the sealing closure of the invention showing an alternate embodiment of the bolt member;

FIG. **6** is an exploded view of an alternate embodiment of the skimmer sealing closure of the invention wherein the bolt is replaced with a hook stud and cam lock members;

FIG. **7** is an exploded view of the sealing closure similar to FIG. **6**; and

FIG. **8** is an exploded view of the sealing closure being inserted into the opening of a skimmer plate prior to sealing.

DETAILED DESCRIPTION OF INVENTION

Reference will now be made to the drawings showing detailed embodiments of the present invention, wherein identical reference numerals identify identical elements and prime numerals, if used, identify similar elements throughout the various drawing figures. The invention may, however, be embodied in different forms and should not be construed as being limited to the embodiments set forth herein.

FIG. **1** depicts an exploded view in cross section of the sealing closure **10** of one embodiment of the present invention as it would appear when it is to be assembled in a skimmer opening of a swimming pool skimmer **12**. Skimmer **12** is mounted on a pool sidewall **14**. The skimmer carries a peripheral flange **16** which is secured to the pool sidewall **14** by a plurality of screws (not shown), all of which are well known in the art. The skimmer body **12** carries sidewalls **18** which extend from the flange **16** inwardly and away from the pool sidewall **14**. The opening defined by the sidewalls permits the

drawing off of surface water from the pool for subsequent filtration and heating purposes. The details of the skimmer body and its function are more fully described in U.S. Pat. No. 5,285,538 to Hodak et al., the contents of which are incorporated by reference herein. Sealing closure **10** of the invention is inserted in the skimmer opening defined by the skimmer sidewalls **18**. The sealing enclosure **10** comprises a closure faceplate **20** on the pool or water side of the skimmer. The closure faceplate at its outer periphery overlaps an area of the skimmer flange at **21** and acts as a stop to prevent movement of the closure faceplate **20** into the skimmer opening. The closure faceplate **20** carries sidewalls **22**. The closure faceplate also, in one preferred embodiment, carries an integral bolt **32** which has an enlarged shank portion **35** for strength purposes. The closure faceplate **20** and sidewalls **22**, as well as bolt **35**, are preferably of a one-piece integral injection-molded piece molded from a rigid hard plastic material such as an ABS plastics resin.

A monolithic sealing gasket **24** is also provided which snugly fits around the sidewalls **22** of the closure faceplate **20**. The gasket **24** carries outer sidewalls **25** with a tapered entry area of the sidewalls at **26**. The sealing gasket **24** also has a thicker upper stop section **27** which rests at its face at the underside of the faceplate **20** and on its face walls along the sidewall **22**. The monolithic sealing gasket **24** is preferably formed by injection molding from a silicone rubber of 30 durometer, or from a neoprene material or the like polymerized material which remains flexible and resistant to degradation. In one embodiment, the gasket **24** is secured to the underside of the closure faceplate **20** by an adhesive material at enlarged portion **27**. Alternatively, the sealing gasket **24** can be held in place on the faceplate **20** by a continuous channel (not shown) formed around the underside of the faceplate **20**. In such an alternate embodiment, the sealing gasket **24** would carry a protrusion at area **27** which would snap fit into the channel as disclosed in U.S. Patent Application Publication US2010/0147846 A1, the contents of which are incorporated by reference herein.

A wedge plate member **28** is also provided which, in plan view, is rectangularly shaped having a flat outer plate surface **29** with tapered sidewalls **30** tapering inwardly from the surface **29** to an edge portion **30'**. The wedge plate **28** also has an undercut region **40** dimensioned to permit the wedge plate to be fitted around the sidewalls **22** of the closure faceplate **20** when the parts are mated. The flat surface **29** of the wedge plate **28** has a bore hole **31** formed therethrough to permit the terminal end of the bolt **32** to extend therethrough such that a wing nut **33** having a threaded bore **34** can mate with the bolt **32**. As the wing nut **33** is tightened on the bolt **32**, the tapered or beveled sidewalls **30** of the wedge plate **28** engage the tapered sidewalls **26** of the sealing gasket **24** causing the outer sidewalls **25** of the sealing gasket **24** to begin to flexibly flare outwardly, as shown in FIG. **3**. When fully tightened, as shown in FIG. **4**, the sealing assembly **10** has the outer sidewalls **25** of the sealing gasket **24** expanded and flared outwardly so that they will tightly, sealingly engage the sidewall **18** of the skimmer opening, forming a watertight seal thereabout. The four corners of the beveled edges of the wedge plate **28** may be formed in an outwardly flared fashion so as to ensure that the four corners of the gasket **24** tightly seal the corners of the sidewall **18** of the skimmer opening (not shown). In this manner, no water can enter the sealing closure and skimmer opening from the poolside. Thus, no water can enter the skimmer body, pump pipe, pump, filtration equipment, or heater from the pool.

In another presently preferred embodiment shown in FIG. **5**, a threaded shank **35'** may be provided on the inside surface of the closure faceplate **20** to permit the insertion of a bolt **32'** from the outside of the wedge plate member **28**. The same sealing action as described above of the closure **10** takes place as the bolt **32'** is screwed into the shank **35'**.

In a still further embodiment of my invention, a closure plate is provided having a rectangular shape, slightly larger than the skimmer opening such that it engages the skimmer flange **16** at area **21** as shown in FIG. **1**. In this embodiment, the sealing gasket is configured to snap into a channel formed on the underside of the closure plate as previously described. However, in this embodiment no wedge plate or bolt is employed by virtue of the fact that the sealing gasket carries an outwardly flared and curved flexible lip which tightly engages the sidewalls **18** of the skimmer opening when the closure plate is forcibly inserted into the skimmer opening. The closure plate remains in place due to the interference fit between the flexed sealing gasket lip and the skimmer sidewalls.

In the sealed position, the underside of the closure plate rests against the skimmer flange **12** at area **21**. The underside of the closure plate could have several undercut notched areas formed therein to permit the insertion of a screwdriver tip, for example, to permit removal of the closure plate from the skimmer opening in the spring when the pool is to be opened.

A further presently preferred embodiment of the skimmer sealing closure **10'** of the invention is shown in FIGS. **6-8**. The sealing closure **10'** includes a closure faceplate **20'** which has an outer area **21'** which overlaps a portion of the skimmer flange **16** when the sealing closure **10'** is inserted into the skimmer opening defined by the skimmer sidewalls **18**, see FIG. **8**. The faceplate **20'** carries an integral rectangular flange **50** on its inward side (away from the pool) which, in turn, serves as a backup for an elastomeric sealing member **25'** or sealing gasket which is mounted on the outer periphery of the flange **50**. The sealing member **25'** is adapted to sealingly engage the sidewalls **18** of the skimmer opening when a spreader plate **28'** or wedge plate is forced into engagement with the faceplate **20'** and exerts a rearward force thereon by way of a hook stud **54** attached to the faceplate and acted upon by a cam lock **60** which exerts the desired rearward force. The hook stud **54** carries a hook portion **55** which extends through a bore **56** formed through the spreader or wedge plate **28'** whereupon the hook portion **55** can engage a bar **57** carried by the cam lock **60**. The cam lock **60** carries curved cam surfaces **62** and an outwardly extending arm **64**. When the bar **57** of the cam lock **60** engages the hook portion **55** of the hook stud **54**, the curved cam surfaces **62** press against a rear face **58** of the spreader plate **28'** and exert a closing force thereon when the arm **64** is moved.

The rear face **58** of the spreader plate **28'** also has a pair of spaced-apart tabs **59** to nearly engage side edges **63** of the cam lock **60** so as to center the cam lock **60** with the bore **56** and enable the alignment of the hook portion **55** with the bar **57** of the cam lock.

The faceplate **20'** also carries an integrally molded rectangular member **52** located inwardly of the rectangular flange **50** and projections **51** and **53**. The projections **51** are right angle members adapted to engage and align opposed corners **69** of the beam portion **70** of the stud **54**. The projections **53** have latching hooks **71** to snap onto the flanges **72** carried by the beam portion **70** on opposed sides of the beam portion. In this manner, the stud **54** and hook **55** are snapped into tight engagement with the faceplate **20'**.

The faceplate **20'**, wedge or spreader plate **28'**, and cam lock **60** are all preferably made from injection molded plastic materials such as ABS plastic material or the like.

The hook portion **55** of the stud **54** preferably carries an outwardly extending alignment web **75** that extends longitudinally along a side of the stud **54**, on the side opposite the hook portion **55**. The web **75** is configured to slidably fit into a key slot **76** formed outwardly from the bore **56** of the spreader plate **28'**. When the hook portion **55** of the stud **54** is inserted into the bore **56**, the web **75** enters the key slot **76** to align the hook portion **55** with the bar **57** of the cam lock **60** and prevents the stud **54** from turning or twisting relative to the spreader plate **28'** when the cam lock **60** is moved to apply a rearward force on the assembly **10'**, see FIG. **6**.

FIG. **7** is similar to the exploded view of FIG. **6** except from a reversed side to show additional details, such as the bar **57** of the cam lock **60**. FIG. **7** also shows the stud **54** snapped into engagement with the rear side of the faceplate **20'**.

FIG. **8** depicts the sealing closure **10'** of the invention in an assembled state prior to use in sealing off a skimmer opening. In the assembled state shown in FIG. **8**, the closure plate **10'** has the closure faceplate **20'**, spreader or wedge plate **28'**, and the cam lock **60** mated together and ready to be placed into the opening of the skimmer **12**. The assembled closure plate is inserted into the opening of the skimmer from the pool side such that the flange **21'** of the closure faceplate **20'** rests against the flange **16** of the skimmer **12** with the cam lock **60** in the unlocked position, i.e., wherein the cam lock handle **64** is parallel to the plane of the plate **20'**. After insertion, the handle **64** is moved to a locking position where the handle is perpendicular to the plane of plate **20'**. As the handle **64** is moved to the perpendicular, locking position, the cam lock **60** forces the spreader or wedge plate **28'** into engagement with the inside of the elastomeric sealing member **25** forcing it into sealing engagement with the sidewalls **18** of the skimmer **12** to prevent water leakage into the skimmer.

While specific embodiments of the invention have been described in detail, it will be appreciated by those skilled in the art that various modifications and alternatives to those details could be developed in light of the overall teachings of the disclosure. The presently preferred embodiments described herein are meant to be illustrative only and not limiting as to the scope of the invention which is to be given the full breadth of the appended claims and any and all equivalents thereof.

The invention claimed is:

1. A closure assembly for closing off a skimmer opening for a swimming pool comprising:

a closure faceplate having integral sidewalls in the rectangular shape of the skimmer opening;

said closure faceplate also having a flange which overlaps a peripheral area of the skimmer opening;

the closure faceplate sidewalls extending into the skimmer opening;

a monolithic sealing gasket, fitting around an outer perimeter of the closure faceplate sidewalks;

a wedge plate member for engaging inside sidewalls of the sealing gasket, fitted into the sealing gasket; and

closure means for exerting a force between the closure faceplate and the wedge plate to pull the faceplate and wedge plate together, wherein the movement of the wedge plate member against the sealing gasket causes outer sidewalls of the sealing gasket to flex outwardly and tightly engage the sidewalls of the skimmer opening, forcibly urging the sealing gasket into tight sealing engagement with the sidewalls of the skimmer opening to prevent water leakage into the skimmer, preventing leakage of water from the poolside into the skimmer, wherein the closure means comprises:

a stud member for attachment to the closure faceplate, the stud member extending rearwardly from the closure faceplate and having a hook portion at a distal end;

the wedge plate member having a bore hole formed therethrough to allow passage of the hook portion of the stud, and

a cam lock fitted on a rear surface of the wedge plate member for attachment to the hook portion of the stud, whereby movement of the came lock forces the wedge plate member into engagement with the sealing gasket.

2. The closure member of claim **1**, wherein the closure faceplate, wedge plate member, and cam lock are of an injection molded plastic material.

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